

WHAT IS CLAIMED IS:

1. A lithographic projection apparatus comprising:
 - a radiation system configured to provide an unpatterned projection beam of radiation;
 - a support structure configured to support a patterning device, the patterning device configured to pattern the unpatterned projection beam according to a desired pattern;
 - a substrate table configured to hold a substrate;
 - a projection system configured to project the patterned projection beam onto a target portion of the substrate,
 - a sensor configured to detect luminescent radiation radiated by at least one region of an area on a component of the apparatus traversed by the unpatterned projection beam or the patterned projection beam; and
 - a control device configured to determine the intensity, in the at least one region, of the unpatterned projection beam or the patterned projection beam from the detected luminescent radiation.
2. A lithographic projection apparatus according to claim 1, wherein the sensor detects the luminescent radiation from a plurality of regions of the area on which the unpatterned projection beam or the patterned projection beam is incident and the control device determines the intensity of the patterned projection beam or the unpatterned beam in each of the regions.
3. A lithographic projection apparatus according to claim 1, wherein the component is a reflector and the sensor is not in an incident path or a reflected path of the unpatterned projection beam or the patterned projection beam.
4. A lithographic projection apparatus according to claim 1, wherein the component is a multilayer stack forming a distributed Bragg reflector.
5. A lithographic projection apparatus according to claim 1, wherein the component is a reflector within one of the projection system and the radiation system.
6. A lithographic projection apparatus according to claim 1, wherein the component is a first reflector on which the unpatterned projection beam is incident.
7. A lithographic projection apparatus according to claim 1, wherein the sensor detects the total intensity of luminescent radiation radiated by the at least one region.
8. A lithographic projection apparatus according to claim 2, wherein the sensor detects the total intensity of luminescent radiation radiated by the plurality of regions.

9. A lithographic projection apparatus according to claim 1, wherein the sensor detects the intensity of luminescent radiation radiated by the at least one region at one or more wavelengths.
10. A lithographic projection apparatus according to claim 2, wherein the sensor detects the intensity of luminescent radiation radiated by the plurality of regions at one or more wavelengths.
11. A lithographic projection apparatus according to claim 1, wherein the patterning device, the projection system, the substrate and at least part of the radiation system are contained in an evacuated chamber, the at least one region of the area, from which the sensor detects luminescent radiation, is within the evacuated chamber, and the sensor is located outside of the evacuated chamber.
12. A lithographic projection apparatus according to claim 1, wherein the control device is configured to adjust at least one of the exposure time of the target portion of the substrate, the intensity of the unpatterned projection beam of radiation produced by the radiation system, and the intensity distribution of the patterned projection beam in response to the detected luminescent radiation.
13. A device manufacturing method, comprising:
providing a substrate that is at least partially covered by a layer of radiation-sensitive material;
providing an unpatterned projection beam of radiation using a radiation system;
projecting a patterned projection beam of radiation onto a target portion of the layer of radiation-sensitive material;
detecting luminescent radiation radiated by at least one region of an area on a component traversed by the unpatterned projection beam or the patterned projection beam;
and
determining the intensity, in the at least one region, of the unpatterned projection beam or the patterned projection beam from the detected luminescent radiation.
14. A device manufacturing method according to claim 13, wherein detecting luminescent radiation further comprises detecting luminescent radiation from a plurality of regions of the area on the component on which the unpatterned projection beam or the patterned projection beam is incident and determining the intensity includes determining the intensity of the unpatterned projection beam or the patterned beam in each of the regions.